WHAT IS CLAIMED IS:

1. A method of performing a glitch check in simulating a circuit, the method comprising the following steps:

determining a current maximum and minimum values for an optimization parameter of the circuit;

determining a signal characteristic value for circuit simulation based on the maximum and minimum optimization parameters;

determining a current averaged optimization parameter;

calculating a prime criterion parameter based on the optimization parameters and the signal characteristic value;

determining whether the prime criterion parameter converges to a prescribed range;

if the prime criterion parameter converges into the prescribed range then parsing measurement results from the circuit simulation;

if the prime criterion parameter does not converge into the prescribed range;

simulating the circuit based on the current optimization parameter

calculating a new signal characteristic value using the circuit simulation;

determining the results of the circuit simulation based on the signal characteristic value; and

setting the current optimization parameter to a new optimization parameter in response to the signal characteristic value.

2. The method of claim 1 wherein the prime criterion parameter is a bisection error of the circuit simulation.

3. The method of claim 1 wherein the process reiterates until the prime criterion parameter converges into the prescribed range.

4. The method of claim 1 wherein the signal characteristic value is the width of the signal pulse.

5. The method of claim 4 wherein the width of the signal pulse is measured respectively for simulations based on the current minimum, current maximum and current optimization parameters.

6. The method of claim 5 wherein the current optimization parameter is set to be the current minimum optimization parameter if both simulations based on the current minimum and current optimization parameters indicate the same status, either both succeed or both fail, otherwise the current optimization parameter is set to be the current maximum optimization parameter.

7. The method of claim 6 wherein the succeed status is determined if the simulation result meets a user-prescribed condition and the width of the signal pulse is no less than said user-prescribed condition, and the fail status is determined if the simulation result doesn't meet said user-prescribed condition or the width of the signal pulse is less than said user prescribed condition.

8. The method of claim 1 wherein the signal characteristic value is the height of the signal pulse.

9. The method of claim 8 wherein the height of the signal pulse is measured respectively for simulations based on the current minimum, current maximum and current optimization parameters.

10. The method of claim 9 wherein the current optimization parameter is set to be the current minimum optimization parameter if both simulations based on current minimum and current optimization parameters indicate the same status, either both succeed or both fail, otherwise the current optimization parameter is set to be the current maximum optimization parameter.

11. The method of claim 10 where the succeed status is determined if the simulation result meets a user-prescribed limit and the height of the signal pulse is not greater than said user-prescribed limit, while the fail status is determined if the simulation result does not meet said user-prescribed limit or the height of the signal pulse is greater than said user-prescribed limit.

12. The method of claim 1 wherein the signal characteristic value is a slew time of the signal transition.

13. The method of claim 12 wherein for a meta-stability check the slew time of the signal transition is measured respectively for simulations based on the current minimum, current maximum and current optimization parameters.

14. The method of claim 13 wherein the current optimization parameter is set to be the current minimum optimization parameter if both simulations based on current minimum and current optimization parameters indicate the same status, either both succeed or both fail, otherwise the current optimization parameter is set to be the current maximum optimization parameter.

15. The method of claim 14 where the succeed status is determined if the simulation result meets a user-prescribed limit and the slew time of the signal transition is not greater than said user-prescribed limit, while the fail status is determined if the simulation result does not meet said user-prescribed limit or the slew time of the signal transition is greater than said user-prescribed limit.

16. A method for performing a glitch check on multiple nodes of a simulated circuit, the method comprising the following steps:

determining a current optimization parameter from a maximum optimization parameter and a minimum optimization parameter of the circuit simulation;

calculating a prime criterion parameter based on the optimization parameters;

determining whether the prime criterion parameter converges to a prescribed range;

if the prime criterion parameter converges into the prescribed range, then saving the current optimization parameter as a setup and hold time for circuit simulation calculations;

if the prime criterion parameter does not converge into the prescribed range;

simulating the circuit based on the current optimization parameter;

calculating a current prime criterion parameter based on the circuit simulation;

measuring a secondary criterion parameter for all reference nodes;

setting the status of the current simulation to fail if the simulation result does not meet a user-prescribed limit or there is any value of the secondary criterion parameters of all reference nodes greater than the user-prescribed limit; and

setting the status of the current simulation to succeed if the simulation result meets the user-prescribed limit and the values of the secondary criterion parameters of all the reference nodes are not greater than the user-prescribed limit.

17. The method of claim 16 wherein the prime criterion parameter is a bisection error of the circuit simulation.

18. The method of claim 16 wherein the process reiterates until the prime criterion parameter converges into the prescribed range.

19. The method of claim 16 wherein the secondary criterion parameter is the height of a signal pulse.

20. The method of claim 19 wherein the height of the signal pulse is measured within a specified measurement range centered by a clock transition.

21. The method of claim 16 wherein the current optimization parameter is set to be the current minimum optimization parameter value when the current optimization parameter and the minimum optimization parameter indicate the same status.

22. The method of clam 16 wherein the current optimization parameter is set to be the current maximum optimization parameter value when the current optimization parameter do not indicate the same status.

23. The method of claim 16 wherein for a meta-stability check the secondary criterion parameter is a metastable time.

24. The method of claim 23 wherein the metastable time is the time that a signal transition stays in a prescribed voltage range.

25. The method of claim 24 wherein the metastable time is measured within the specified measure range centered by the clock transition.

26. A method for performing a reliability check and timing characterization simultaneously on a simulated circuit, the method comprising the following steps:

defining a path of the circuit to be analyzed;

determining an initial optimization parameter and criterion parameter for the simulation of the circuit;

determining a signal characteristic in response to the optimization parameter;

performing the circuit simulation;

determining whether the criterion parameter converges such that if the criterion parameter converges then the signal characteristic is optimized otherwise continuing to perform the simulation with a new optimization parameter until the criterion parameter converges.

27. The method of claim 26 wherein the criterion parameter is a bisection error of the circuit simulation.

28. The method of claim 26 wherein the signal characteristic is a width of a signal pulse.

29. The method of claim 26 wherein the signal characteristic is a height of a signal pulse.

30. The method of claim 26 wherein the signal characteristic is a slew time of a signal transition.